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A PILOT BASIC EDUCATION PROGRAM FOR SCHOOL DROPOUTS INCORPORATING A TOKEN REINFORCEMENT SYSTEM.

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A 2-MONTH BASIC EDUCATION PROGRAM TESTED WHETHER A TOKEN REINFORCEMENT MIGHT BE AN EFFECTIVE INCENTIVE TO STIMULATE A DESIRED EDUCATIONAL BEHAVIOR. THE SUBJECTS (SS) WERE TWO MATCHED GROUPS OF FIVE 16- TO 21-YEAR-OLD GIRLS WHO WERE SCHOOL DROPOUTS EMPLOYED IN A NEIGHBORHOOD YOUTH CORPS (NYC) PROGRAM. A CLASSROOM GROUP WAS GIVEN A BASIC EDUCATION PROGRAM WITH TOKEN REINFORCEMENT AND THE NYC JOB PLACEMENT, WHILE A JOB GROUP RECEIVED ONLY THE NYC PLACEMENT. BOTH GROUPS WERE PAID ACCORDING TO THE REGULAR NYC PAYMENT PRACTICES. THE REINFORCEMENT SYSTEM FOR THE CLASSROOM GROUP USED A POINT SCALE TO CORRECT ANSWERS (89 PERCENT CORRECT CRITERION) TO INSTRUCTIONAL MATERIALS WHICH WOULD DETERMINE THE GIRLS' SALARIES AND A POSSIBLE REWARD OF COMMODITIES. THE GIRLS WORKED INDIVIDUALLY ON THE COMMERCIAL INSTRUCTIONAL MATERIALS AND PACED THEMSELVES. THE POINT VALUES WERE SHIFTED TO INCREASE THE PROBABILITY OF THE SS' WORKING MORE INTENSIVELY IN THE AREAS OF GREATER DEFICIENCIES. A COMPARISON OF PRETEST AND POST-TEST CALIFORNIA ACHIEVEMENT TEST SCORES SHOWED A MEDIAN INCREASE OF 1.3 YEARS FOR THE CLASSROOM GROUP AND 0.2 YEARS FOR THE JOB GROUP. THE OVERALL REMEDIAL PROGRAM INCREASED THE ACADEMIC SKILLS OF THE GIRLS IN A RELATIVELY BRIEF PERIOD, AND THE TOKEN SYSTEM SEEMED TO BE FUNCTIONAL BECAUSE THE CHANGES IN THE NUMBER OF POINTS WHICH COULD BE EARNED IN CERTAIN WORKBOOKS MODIFIED THE STUDENTS CHOICE OF MATERIALS. (NH)

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A PILOT BASIC EDUCATION PROGRAM FOR SCHOOL DROPOUTS INCORPORATING A TOKEN REINFORCEMENT SYSTEM[1]

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Token reinforcement systems have been used successfully in a number of applied settings (Ayllon and Azrin, 1965; Birnbrauer, Wolf, Kidder and Tague, 1965; Cohen, Filipczak and Bis, 1965; Girardeau and Spradlin, 1964; Staats and Butterfield, 1965; and Wolf, Giles, and Hall, 1966). In each case stimuli such as script, points, or stares were established as conditioned (secondary) reinvorcers by being paired with privileges, recreational activities, money, and other "backup" reinforcers.

The main advantage of a token system is that the token can more conveniently be made an immediate consequence of the behavior than the backup event and thus can bridge the gap between the desired response and the backup reinforcer. For example, in an education program in an institutional setting, tokens can be earned for each problem worked correctly in class. And, a set number of tokens can be required to watch television, shoot pool or attend a movie which occurs only on Friday night.

Another consideration is that token systems often can use, as backup reinforcers, important items and events which already exist in a setting, but which are having little influence on desired behaviors. These items can be put to use as consequences to strengthen the behaviors which the agency is designated to establish. There are a number of educational training agencies which might become more efficient in obtaining their behavioral goals if they would utilize the potential reinforcers which already exist in their programs. A practical problem that does exist, however, is that many of the potentially most powerful reinforcers in a number of these programs can only be varied in their number or amount within very narrow limits. An example would be the number of meals per day in an institutional setting or the amount of monthly pay in a program such as the Neighborhood Youth Corps. The purpose of the present study was to assess the feasability of a token system in one program where the total amount of potential reinforcement was alterable only within a very narrow range.

The program was a two month, basic education program for five school dropouts who

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were members of the Neighborhood Youth Corps in a midwestern city. The program incorporated a token reinforcement system for academic behavior which was designed to fit the payment practices of the Neighborhood Youth Corps. The overall education program was evaluated by comparison of pre- and post-achievement test scores. The function of the token system was experimentally analyzed with individual subjects. A group of Neighborhood Youth Corps employees who did not receive the education program were also tested in order to assess the effects of Neighborhood Youth Corps employment on their achievement test scores.

PROCEDURE

Students

Twenty-three Neighborhood Youth Corps (hereafter referred to as NYC) employees who were school dropouts between 16 and 21 years of age were given the California Achievement Test (CAT), Jr. High level. Two groups of five girls, who were school dropouts between 16 and 21 years of age, each were matched as closely as possible according to differences between their number of years of formal education and their scores on the Jr. High level, California Achievement Test (CAT), e.g., a girl who was 0.5 years behind her grade level was matched with a girl who was 0.6 years behind, etc. One group was designated the classroom group and received a basic-education program with token reinforcement. The second group was called the job group and received job placement in accordance with the usual NYC practices. While the matching of the groups was on a fairly even basis the selection for the two groups was not completely random since NYC designated certain girls for the job group because the girls were "making so much progress" in their job placements. The mean number of years of education were 8.5 and 8.2 years for the classroom and job groups respectively.

An interview indicated that two of the members of the classroom group terminated their formal schooling because of pregnancy, two for financial reasons and one was asked to leave school for disciplinary reasons. In the job group, three subjects dropped out of school because of pregnancy, one discontinued for financial reasons and one quit school

because of "poor health".

General Program

After the groups were selected, the participants in the job group either continued or were placed at jobs and their wages were paid by the NYC. The classroom group worked in a remedial classroom setting on instructional material for three and one-half hours each morning. In the afternoon the members of this group were placed at various jobs. Again, the wages were provided by the NYC. The program was carried out five days a week for two months.

An explanation of the program was presented to the classroom group. The girls were told that they were to assist the investigators by working on educational materials suitable for young people who were school dropouts. By working these instructional materials they would help the investigators to evaluate these educational procedures and materials and simultaneously would be increasing their own academic skills.

Token Reinforcement System

NYC employees are placed with private, non-profit, civic or state organizations. They are paid a uniform $1.25 an hour for a maximum of 32 hrs. a week ($40.00 per week). Any organization which engages NYC employees is responsible for preparing a time card every two weeks designating the number of hours (up to 64 for a two week period) that the NYC employees have worked. Almost all organizations allow the NYC employees to earn full credit. The $140.00 a month is important to these youths. Several of the girls in the classroom, for example, had children and the NYC funds were their sole means of support.

For these reasons it was necessary to design a token system which would allow the classroom group to be credited with close to their full 32 hours each week, but which would still provide for the money to be contingent upon their academic behavior.

It was explained to the members of the classroom group that their pay would be determined in a two-fold manner: 1.) For three hours every afternoon (15 hours a week) they would work at one of a variety of jobs (nursery teacher aid, clerk, etc.), and

would earn $1.25 an hour, the same as all NYC employees. 2.) For about three and a half hours every morning (17 hours a week) they would work in the classroom, where instead of earning $1.25 an hour, they would receive points for correct answers to the instructional materials. Each point would be the equivalent of one minute (about 2 cents) toward their $1.25 an hour. For each point they made over the amount needed to earn the full credit for the 17 hrs. a week they would receive a bonus of two cents. With these points they were allowed to purchase commodities at a local store.[2]

In order to receive the $1.25 for the full 17 hour week, each girl had to receive credit for an average of 204 points a day or 1,020 points each week. A cumulative record of the points earned by the students was recorded on a weekly tally sheet. These weekly sheets were used as a record of the number of points earned weekly and thus, to establish the "hours of employment" and the wages earned from the NYC.

The distribution of points was basically determined by the time needed to complete a lesson, the nature of the material, and an 80 percent correct criterion on the instructional materials. If the 80 per cent correct criterion was not met, only one-half the originally designated number of points was given for corrected errors. All errors in a selection were corrected before points were recorded on the student's tally sheet.

Classroom Procedures

The classroom group met in the basement of a local church. They were seated at individual card tables. Two chairs were provided at each table, one for the student, and one for the teacher to use when tutoring. Wooden dividers separated the card tables to reduce distraction. On each table was a folder which contained the instructional materials. The selection of which materials to work was left up to the student. When a lesson was completed it was checked, the correct answers were marked and it was returned to the student as soon as possible, usually within ten minutes. The girls worked primarily on their own. When they needed help or had materials to be scored they were instructed to raise their hand. There was no formal lecturing to the group.

Paper, pencils, a ruler, and a dictionary were also provided. Each participant was supplied with a clip board which contained a daily tally sheet for showing completed w ork and the points earned.

The girls were to work from 9:30 a.m. to 1:00 p.m. in the remedial classroom and three hours in the afternoon at their various jobs, five days a week. During their morning work, the girls were free to take a "break" at their own discretion.

As the program progressed and the girls became familiar with the project, the distribution of the points was shifted so as to increase the probability of the students working in the instructional areas in which they needed the most training. For example, several of the students were deficient in the area of arithmetic; therefore, relatively more points were given these students for correct arithmetic problems.

Instructors

One and often two teachers were in the classroom. They were graduate students in special education and psychology. An additional NYC employee helped with the scoring of the completed materials.

Materials

The instructional materials used in the program are all commercially available.[3] Many of them were designed for slow learners or students who are retarded in their achievement level. Materials were chosen which looked as though they would be "interesting" to teenage students, and which required written responses for objective scoring so that token reinforcers could be easily administered for correct answers. Content areas included reading, English grammar, language, arithmetic, American history, social studies, and science. Most emphasis was placed on reading and arithmetic computation.

Initially each student was given materials that matched the grade level at which the pre-test indicated she could perform. The level of the materials was then raised as fast as appeared feasible.

RESULTS

The attendance was regular, with the exception of one subject. Four subjects attended the incentive remedial class approximately 44 days or eight weeks and four days. The fifth subject attended twenty-four days. This subject married and dropped out of the program during the second month. Often, one subject, and occasionally two, began work on the instructional materials before the appointed arrival time. None of the girls made use of the "break" privilege at anytime during the mornings.

One of the girls consistently earned more points each week than the 1,020 points needed to receive the maximum wage paid by the NYC. She received the extra incentive bonus of two cents per point, applicable to purchase commodities at a local store. Two other students frequently earned the necessary points and the extra incentive bonus, while the fourth student completed her points and earned a bonus only twice during the two months. The fifth student never earned her full number of points primarily due to excessive absenteeism. Except as a function of absenteeism, a student never earned less than $125 of her possible $140 per ~~week~~ month from NYC. For the entire class, the average number of bonus points earned weekly was 254.3 points or $5.09 per week.

Figure 1 about here

The results of the CAT pre-test and post-test total battery are summarized in Figure 1. The median increase for the classroom group was 1.3 years, and for the job group was 0.2 years. The girl who married and dropped out of the classroom group during the second month scored an increase of .9 years.

The pre and post test results for both groups on the sub-tests are also presented in Figure 1. As can be seen the greatest gains for the classroom group were in reading and arithmetic scores. Several job group girls actually lost ground in these areas. The gains in language were about equal for both groups.

Some of the girls showed marked preferences for certain materials. By changing the number of points which could be earned in certain workbooks, it was possible to modify their choice of materials. Figure 2 shows the results of this procedure over a three week

period for a girl who was very sensitive to changes in point values. On the first day a reading workbook was placed on her desk.[4] She was told that she would receive one-half point for each correct answer to each of the 12 to 13 questions which were asked at the end of each of the approximately 190 word stories. Her rate under this condition averaged less than one story per day. After six days the condition was changed to two points per correct answer. Her rate increased during the next five days to an average of three stories per day. When the number of points was changed back to one-half point per correct answer, the rate fell to zero during the next five days.

Figure 2 about here

DISCUSSION AND CONCLUSIONS

The results indicate that the overall remedial program was effective in substantially increasing the academic skills of the students in a relatively short period of time. The employment programs of the job group led to only a slight increase in their academic skills. The token reinforcement system (which was engineered to be in line with the NYC wage policy) appeared to be functional since changes in the point contingencies shifted the students choice of materials. Thus, the token reinforcement system was feasible under conditions where the reinforcers could only vary within a very limited range.

FOOTNOTE

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[2]These items were purchased with funds provided by the research program.

[3]A list of the materials is avialable from, Marilyn Clark, Bureau of Child Research, 1043 Indiana, Lawrence, Kansas.

[4]New Practice Reader (unit F) McGraw-Hill Co.

FIGURE CAPTIONS

Figure 1

Differences in pre and post California Achievement Test scores for the classrom group and for the job group. The tests were given two months apart.

Figure 2

A record of the effects on reading rate, for one girl, of changes in the number of points obtainable for each correct answer in a reading workbook. The points were shifted from one-half point per correct answer for the first six days to two points during the next five days, then back again to one-half point during the last five days. Note the increase in rate as a function of the change to two points obtainable for correct answers.

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Figure 1

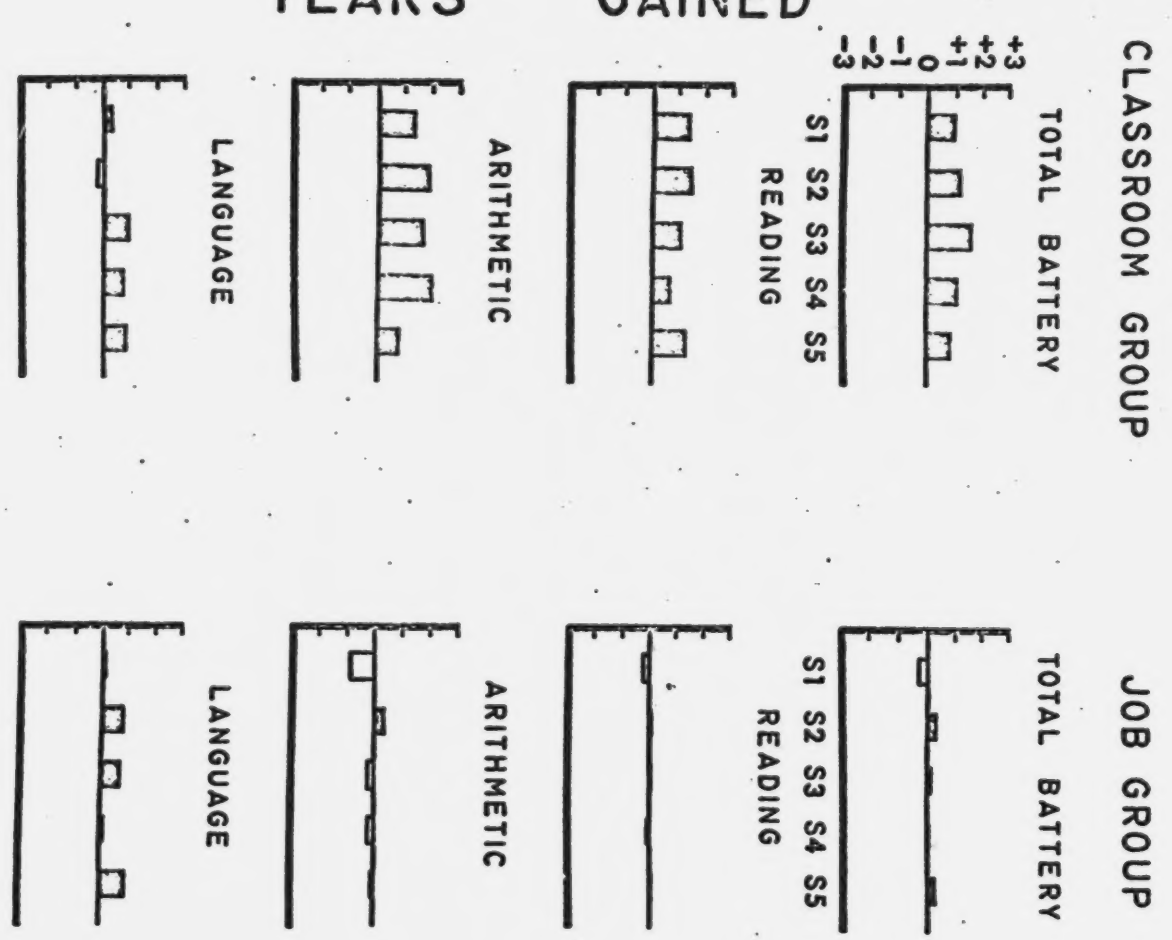

Figure 2